

Do Not Enter  
After Final Amend.  
1/4/08: KPW

(MON) DEC 17 2007 13:41:41 / No. 7500000450 P 3

RECEIVED  
CENTRAL FAX CENTER

Appl. No. 10/709,212  
Reply to Final Office Action mailed October 15, 2007

DEC 17 2007

19.0405

**Amendment to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently amended) A method for characterizing a subsurface formation, comprising the steps of:

disposing within a borehole a logging instrument equipped with at least first transmitter and receiver antennas spaced apart by a first distance, at least one of the first antennas having a tilted magnetic dipole with respect to the longitudinal axis of the instrument, such that the tilted magnetic dipole deviates from a plane perpendicular to the longitudinal axis, the antennas being oriented about the axis of the logging instrument such that the at least one tilted magnetic dipole corresponds to a first azimuthal angle and wherein the logging instrument is further equipped with second transmitter and receiver antennas spaced apart by the first distance, the second transmitter having a magnetic dipole whose tilt corresponds to the tilt of the first receiver antenna and the second receiver antenna having a magnetic dipole whose tilt corresponds to the tilt of the first transmitter antenna such that at least one of the second antennas has a tilted magnetic dipole, the second transmitter and receiver antennas being oriented about the axis of the logging instrument such that the at least one tilted magnetic dipole corresponds to a second azimuthal angle;

azimuthally-rotating the logging instrument within the borehole;

while the logging instrument is rotating, activating the first transmitter antenna to transmit electromagnetic energy into the formation;

while the logging instrument is rotating, directionally measuring the first voltage signals associated with the transmitted electromagnetic energy using the first receiver antenna, as a function of the azimuthal orientation of the logging instrument, so as to determine the azimuthal variation of the measured first voltage signals; and

fitting the azimuthal variation of the measured first voltage signals to approximate functions;

while the logging instrument is rotating, activating the second transmitter antenna to transmit electromagnetic energy into the formation;